



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/560,619

12/14/2005

Yutaka Ozawa

050573

6834

23850 7590 02/23/2007
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

REDDY, KARUNA P

ART UNIT

PAPER NUMBER

1713

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|-----------|---------------|
|--|-----------|---------------|

3 MONTHS

02/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/560,619

Applicant(s)

OZAWA ET AL.

Examiner

Karuna P. Reddy

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10 is/are rejected.
- 7) ☐ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>2/21/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-5, 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoff et al (US 6,066,394) in view of Gyobu et al (US 6,242,560 B1) and Matsumoto et al (US 6,174,943 B1).

Hoff et al disclose an emulsion comprising about 50 to about 99.8% C₁-C₁₂ alkyl acrylate monomer, 0 to about 40% vinyl unsaturated monomer, 0.1 to about 10% carboxylic acid functionalized monomer and about 0.1 to about 10% internal crosslinking monomer (abstract). Examples of alkyl acrylates include 2-ethyl hexyl acrylate (column 3, lines 9-10). Suitable carboxylic acid

functionalized monomers include acrylic acid, methacrylic acid. Acrylic acid is a preferred carboxylic acid functionalized monomer (column 3, lines 30-35).

Among internal crosslinking monomers useful are allyl glycidyl ether, glycidyl methacrylate, mixtures thereof and the like (column 3, lines 42-44). Examples of vinyl monomers include vinyl chloride (column 3, lines 16-18). It is noted that T_g of homopolymer of vinyl chloride is not less than 80°C.

The prior art of Hoff et al differs in the kind of crosslinking agent used.

However, Gyobu et al include in their thermoplastic elastomer, compounds having reactive groups such as epoxy (column 6, lines 42-43). The compounds having epoxy groups include polytetramethylene glycol diglycidyl ether, allyl glycidyl ether and glycidyl methacrylate (column 9, lines 1-14). Furthermore, Matsumoto et al in their resin composition have an epoxy compound for the purpose of raising solvent resistance, heat stability at melting and to prevent discoloration (column 13, lines 6-11). Examples of epoxy compound include polytetramethylene glycol diglycidyl ether (column 13, line 32-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to use polytetramethylene glycol diglycidyl ether as a crosslinker in the composition of Hoff et al because Gyobu et al has shown that glycidyl methacrylate is functionally equivalent to polytetramethylene glycol diglycidyl ether and Matsumoto has shown the advantages of adding polytetramethylene glycol diglycidyl ether to resin compositions and one of ordinary skill in the art

would have expected the addition of polytetramethylene glycol diglycidyl ether to work for the emulsion of Hoff et al, motivated by expectation of success.

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al (JP 10046099 A) in view of Gyobu et al (US 6,242,560 B1) and Matsumoto et al (US 6,174,943 B1).

Matsumoto et al (JP 10046099 A) disclose an emulsion comprising 30-95 wt% of (meth)acrylate wherein the alkyl group contains C₁-C₁₂ carbon atoms; 5 to 70 wt% of styrene, 0.5 to 10.0 wt% of an unsaturated carboxylic acid (abstract). Example of alkyl ester of (meth)acrylic acid includes lauryl (meth)acrylate and 2-ethylhexyl (meth)acrylate (paragraph 0005). As unsaturated carboxylic acids mention is made of acrylic acid (paragraph 0005). In addition a copolymerizable monomer such as glycidyl (meth)acrylate can be used (paragraph 0008). It is noted that T_g of homopolymer of styrene is not less than 80°C.

The prior art is silent with respect to the crosslinker polytetramethylene glycol diglycidyl ether.

However, Gyobu et al include in their thermoplastic elastomer, compounds having reactive groups such as epoxy (column 6, lines 42-43). The compounds having epoxy groups include polytetramethylene glycol diglycidyl ether, allyl glycidyl ether and glycidyl methacrylate (column 9, lines 1-14). Furthermore, Matsumoto et al (US 6,174,943 B1) in their resin composition have an epoxy

Art Unit: 1713

compound for the purpose of raising solvent resistance, heat stability at melting and to prevent discoloration (column 13, lines 6-11). Examples of epoxy compound include polytetramethylene glycol diglycidyl ether (column 13, line 32-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to use polytetramethylene glycol diglycidyl ether as a crosslinker in the composition of Matsumoto et al (JP 10046099 A) because Gyobu et al has shown that glycidyl methacrylate is functionally equivalent to polytetramethylene glycol diglycidyl ether and Matsumoto et al (US 6,174,943 B1) has shown the advantages of adding polytetramethylene glycol diglycidyl ether to resin compositions and one of ordinary skill in the art would have expected the addition of polytetramethylene glycol diglycidyl ether to work for the emulsion of Matsumoto et al (JP 10046099 A), motivated by expectation of success.

5. Claims 1 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori (JP 2002088343 A) in view of Gyobu et al (US 6,242,560 B1) and Matsumoto et al (US 6,174,943 B1).

Komori discloses an emulsion comprising 84.5 to 98.88 wt% acrylic ester wherein the alkyl group has 4 to 12 carbon atoms, 1-10 wt% of acrylonitrile, 0.1 to 5 wt% of α , β -unsaturated carboxylic acid and 0.02 to 0.5 wt% ethylenically unsaturated polyfunctional crosslinkable monomer (abstract). Examples of acrylic esters include 2-ethyl hexyl acrylate and lauryl acrylate (paragraph 0010).

Art Unit: 1713

Examples of α , β -unsaturated carboxylic acid include acrylic acid (paragraph 0012). Crosslinkable monomers are exemplified by glycidyl (meth)acrylate (paragraph 0013). It is noted that T_g of homopolymer of acrylonitrile is not less than 80°C.

The prior art is silent with respect to the crosslinker polytetramethylene glycol diglycidyl ether.

However, Gyobu et al include in their thermoplastic elastomer, compounds having reactive groups such as epoxy (column 6, lines 42-43). The compounds having epoxy groups include polytetramethylene glycol diglycidyl ether, allyl glycidyl ether and glycidyl methacrylate (column 9, lines 1-14). Furthermore, Matsumoto et al in their resin composition have an epoxy compound for the purpose of raising solvent resistance, heat stability at melting and to prevent discoloration (column 13, lines 6-11). Examples of epoxy compound include polytetramethylene glycol diglycidyl ether (column 13, line 32-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to use polytetramethylene glycol diglycidyl ether as a crosslinker in the composition of Komori because Gyobu et al has shown that glycidyl methacrylate is functionally equivalent to polytetramethylene glycol diglycidyl ether and Matsumoto et al has shown the advantages of adding polytetramethylene glycol diglycidyl ether to resin compositions and one of ordinary skill in the art would have expected the addition of polytetramethylene glycol diglycidyl ether to work for the emulsion of Komori et al, motivated by expectation of success.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoff et al (US 6,066,394) or Komori (JP 2002088343 A) or Matsumoto et al (JP 10046099 A) each individually, in view of Gyobu et al (US 6,242,560 B1) and Matsumoto et al (US 6,174,943 B1) as applied to claims mentioned above, and further in view of Masaru et al (JP 06-079737).

The discussion with respect to Hoff et al or Matsumoto et al or Komori in view of Gyobu et al and Matsumoto et al in paragraph 3, 4 and 5 is incorporated herein by reference.

The prior art is silent with respect to glove made by immersing a mold in acrylic polymer.

However, Masaru et al teaches making a glove by immersing a mold in resin emulsion exemplified by a copolymer of (meth)acrylate and vinyl chloride (abstract). Therefore, it would have been obvious to one skilled in the art at the time invention was made to immerse a mold into the emulsion of Hoff et al or Komori or Matsumoto et al in view of Gyobu et al and Matsumoto et al to make the glove because Masaru has proven successfully that a mold can be immersed in an emulsion of a copolymer of (meth)acrylate and vinyl chloride to form a glove and one of ordinary skill in the art would have expected the process to work for the emulsion of Hoff et al or Komori or Matsumoto et al in view of Gyobu et al and Matsumoto et al, motivated by expectation of success.

Allowable Subject Matter

7. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or suggest the use of specific combination of crosslinkers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karuna P. Reddy whose telephone number is (571) 272-6566.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-


Art Unit: 1713

free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

Karuna P Reddy
Examiner
Art Unit 1713


DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700